

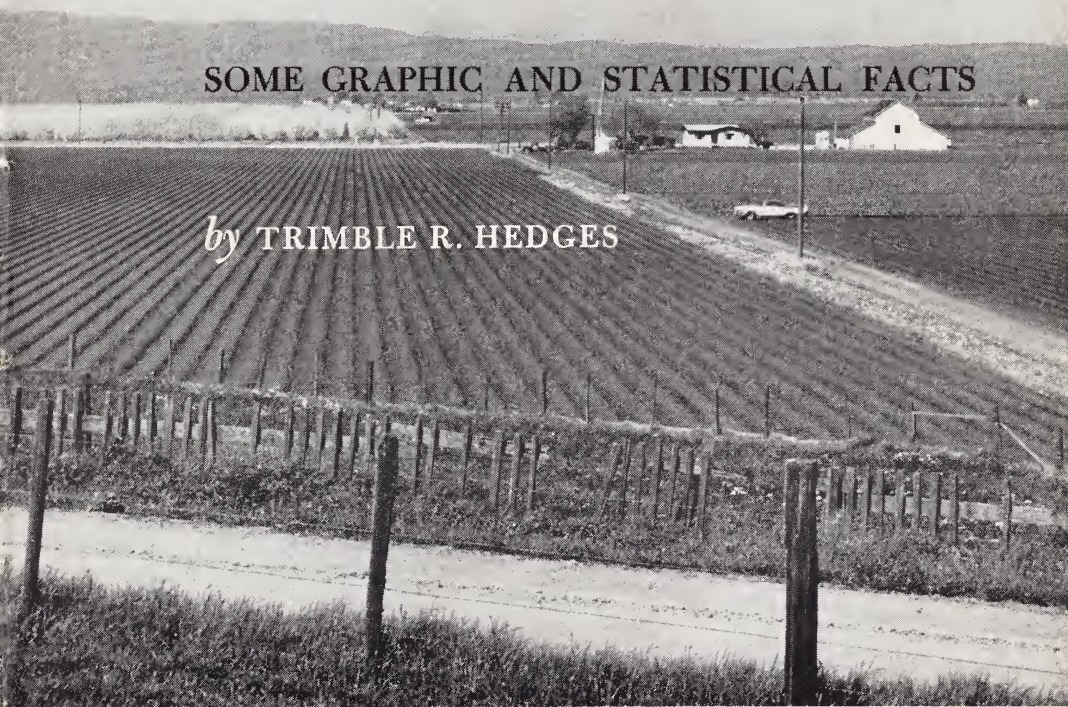


Division of Agricultural Sciences  
UNIVERSITY OF CALIFORNIA

# *V*EGETABLE CROPS IN CALIFORNIA

SOME GRAPHIC AND STATISTICAL FACTS

*by* TRIMBLE R. HEDGES



CALIFORNIA AGRICULTURAL  
Experiment Station  
Extension Service

**CIRCULAR 516**

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# *Vegetable Crops* IN CALIFORNIA

## SOME GRAPHIC AND STATISTICAL FACTS

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This is a preliminary report to cooperators, containing the results of an extended review of existing statistical sources of information on California's vegetable production and consumption. / JULY, 1962

This report presents, in graphic and statistical form, some of the more dominant facts about the nature, location, and timing of California's vegetable industry.

### *Introduction*

*Part 1* summarizes the importance of the industry to California, establishes the state's dominant position in the nation's vegetable production, and makes comparisons among California's more important crops and groups of crops.

*Part 2* examines the geographic and seasonal distribution of California's vegetable production.

*Part 3* reviews and reports on resource use and financial importance of vegetable production commitments and investments in the state; emphasis is on California's over-all vegetable industry.

*Part 4* examines the organization and the more dominant input and gross receipt items for three vegetable producing farms, one specialized with five hundred acres, and the others diversified with sixty and seven hundred fifty acres, respectively, included in general crop rotation.

*Part 5* presents population statistics, as well as selected national per capita consumption data for vegetables and other foods.



## *Acknowledgements*

The author wishes to express sincere gratitude to all who have contributed in various ways to this report. Special thanks are due *The Western Grower and Shipper*, and its editor and publisher, MR. FRANK HOWATT, for important contributions; such thanks are due also to Mr. OSCAR R. BURT, Acting Assistant Professor of Agricultural Economics, Acting Assistant Agricultural Economist in the Experiment Station, and on the Giannini Foundation, Davis, who was largely responsible for summarizing data and preparing tables and figures, and to MRS. BARBARA LABELLE for valuable assistance in drafting and reproducing materials.

About seventy-five growers cooperated by returning completed questionnaires relating to their organization and operations, and the author hereby expresses his appreciation to them.

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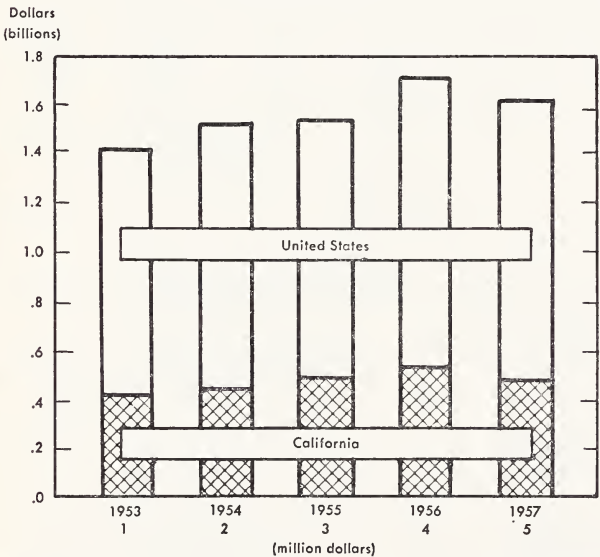
### *About the data used . . .*

Sources of information are indicated by the number in parentheses keyed to the heading of each table or figure. These numbers refer to the listed "Sources of Data" to be found at the back of the report. *For example:* FIGURE-TABLE 1. United States and California gross farm income from vegetables annually, 1953–1957 (1,2).

Vegetables in California accounted for about one-fifth of gross farm receipts on the average during the years 1953–1957, as compared with 6 per cent for the United States. Thus vegetables as an income source are about three times as important in California as in the nation. However, vegetables ranked lowest among the four major sources of California’s farm income, which was headed by livestock and livestock products (36% of the gross). Also ranking ahead of vegetables in farm income were field crops, and fruits and nuts.

# Part 1. California Leads the Nation in Vegetable Production

FIGURE-TABLE 1. United States and California Gross Farm Income From Vegetables, Annually, 1953–1957, (1,2).



California .....	416	429	467	525	482
United States .....	1,402	1,508	1,526	1,712	1,599
California per cent of United States .....	29.7	28.6	29.5	30.7	30.1

TABLE 1  
California Gross Farm Income From Vegetables and Other Major Sources; Five-Year  
Averages, 1953-1957. (1).

Sources	California						
	1953	1954	1955	1956	1957	1953-57 average	Average per cent of four major sources
	1	2	3	4	5	6	7
	(million dollars)						
Livestock and products.....	973	905	949	992	1,017	967	36.2
Field crops.....	733	739	686	738	752	729	27.3
Fruits and nuts.....	458	474	541	580	515	514	19.2
Vegetables.....	416	429	467	525	482	464	17.3
	United States						
Livestock and products.....	16,933	16,284	15,880	16,304	17,376	16,555	56.8
Field crops.....	10,290	9,891	9,656	9,836	8,343	9,603	32.9
Fruits and nuts.....	1,217	1,240	1,287	1,388	1,319	1,290	4.4
Vegetables.....	1,753	1,620	1,761	1,852	1,689	1,735	5.9

TABLE 2  
California Principal Vegetable Crops According to Gross Value; Five-Year Averages,  
1953-1957, (2, 3).

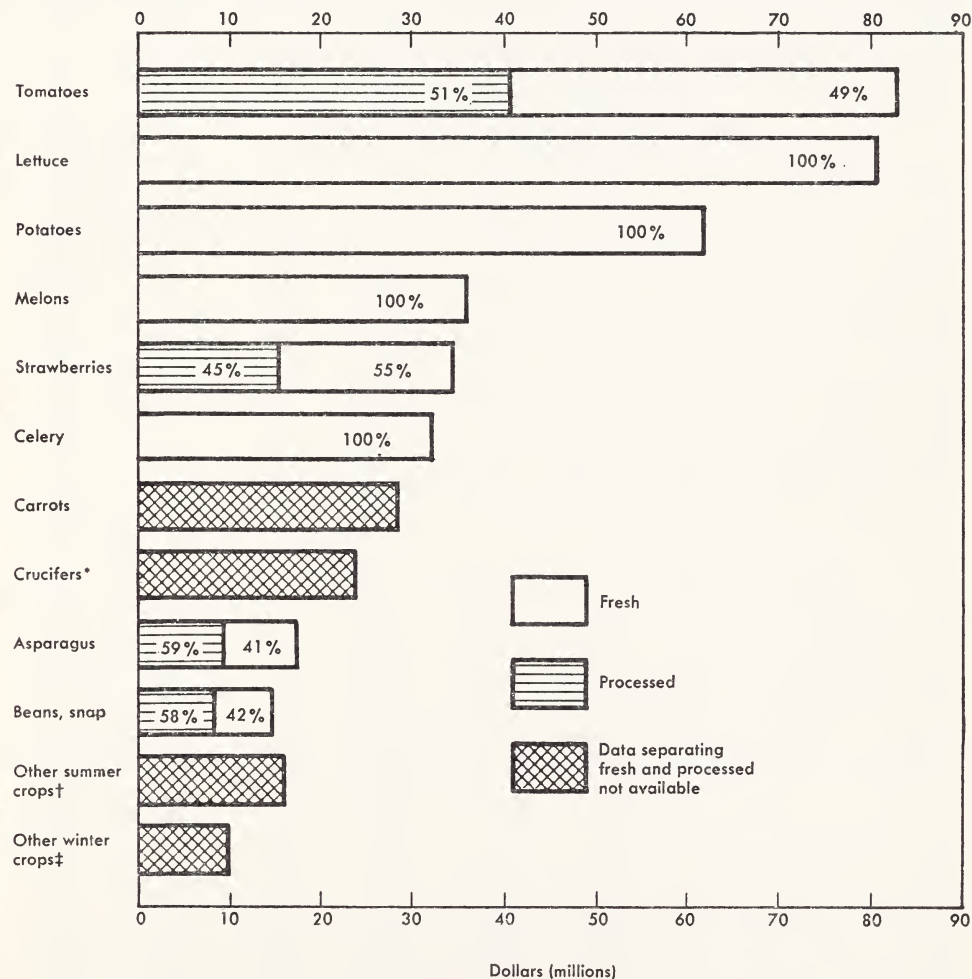
Crop	1953	1954	1955	1956	1957	Five-year averages
	1	2	3	4	5	6
	(thousand dollars)					
Tomatoes.....	67,689	64,947	84,840	107,532	93,403	83,682
Lettuce.....	79,734	77,326	87,000	74,174	85,379	80,723
Potatoes.....	46,120	61,245	58,511	95,179	47,674	61,746
Melons.....	35,262	33,514	31,887	31,089	44,674	35,285
Strawberries.....	30,152	33,698	33,627	41,216	33,549	34,448
Celery.....	28,441	28,186	32,315	29,603	36,563	31,022
Carrots.....	30,316	31,148	27,965	24,214	27,673	28,263
Crucifers*.....	24,371	20,451	25,193	25,128	21,983	23,425
Asparagus.....	15,772	17,852	25,304	21,735	19,886	20,110
Beans.....	14,273	16,810	14,487	16,324	17,497	15,878
Other summer crops†.....	16,838	16,954	14,482	15,798	18,099	16,434
Other winter crops‡.....	11,882	12,650	12,803	19,040	16,735	14,622

\* Brussels sprouts, broccoli, cabbage, and cauliflower.

† Peppers, corn, and cucumbers.

‡ Spinach, onions, and peas.

FIGURE 1. Principal California Vegetable Crops According to Gross Value:  
Per Cent Fresh and Processed; Five-Year Averages, 1953-1957, (2,3).



\*Brussels sprouts, broccoli, cabbage, and cauliflower

†Peppers, corn, and cucumbers.

‡Spinach, onions, and peas.

TABLE 3. California Principal Vegetable Crops, Fresh; Annual

Crop	1953	1954	1955	1956	1957	Five-year averages
	1	2	3	4	5	6
(thousand acres)						
Acreages						
Artichokes*	8.6	9.0	8.9	9.4	9.4	9.1
Asparagus*	69.2	72.4	76.7	76.2	75.8	74.1
Beans, snap.	4.8	5.7	5.5	4.9	5.3	5.2
Broccoli*	23.0	17.6	23.6	26.7	24.5	23.1
Brussels sprouts*	5.2	5.4	4.0	5.6	5.3	5.1
Cabbage	9.7	9.1	8.2	8.4	9.6	9.0
Cantaloups	40.4	44.0	44.3	38.4	38.7	41.2
Carrots*	25.3	24.1	24.3	24.4	23.4	24.3
Cauliflower*	12.3	11.0	12.4	12.6	12.8	12.2
Celery	15.7	15.8	15.7	17.8	17.3	16.5
Corn, sweet	19.6	22.3	22.3	18.1	17.6	20.0
Cucumbers	3.1	3.1	3.0	3.0	3.1	3.1
Garlic*	1.5	2.0	2.5	2.4	2.3	2.1
Honeydews	8.0	8.9	9.3	8.0	6.3	8.1
Lettuce	123.6	123.9	125.3	128.5	134.9	127.2
Onions*	14.1	10.3	9.5	9.9	10.9	10.9
Peas, green	6.3	9.1	6.8	5.5	5.6	6.7
Peppers, bell	2.7	3.1	3.6	3.8	4.1	3.5
Persian melons	2.0	1.9	2.3	2.0	1.9	2.0
Potatoes	130.2	95.3	115.6	106.8	113.7	112.3
Spinach	2.5	2.2	1.9	1.9	1.9	2.1
Strawberries*	9.4	10.9	14.0	19.0	20.7	14.8
Sweet potatoes	11.0	12.0	13.0	12.0	13.0	12.2
Tomatoes	27.7	31.7	37.7	37.9	37.9	34.6
Watermelons	18.8	20.2	18.2	19.9	19.7	19.4
Total fresh	594.7	571.0	608.6	603.1	615.7	598.8
(hundredweight)						
Yields						
Artichokes	40	40	40	34	35	37.9
Asparagus	22	21	25	24	25	23.5
Beans, snap.	123	117	110	105	121	115.6
Brussels sprouts	122	108	104	110	100	109.5
Broccoli	54	55	59	59	48	55.5
Cabbage	212	216	227	220	241	223.5
Cantaloups	133	130	126	125	156	134.6
Carrots	252	253	254	257	252	253.6
Cauliflower	154	156	168	158	139	155.4
Celery	525	544	572	567	530	548.5
Corn, sweet	76	74	70	68	77	73.1
Cucumbers	190	199	185	173	191	188.1
Garlic	75	75	85	85	85	82.1
Honeydews	152	152	136	143	150	146.6
Lettuce	175	168	183	169	157	170.4
Onions	288	294	316	353	365	324.2
Peas, green	35	30	39	34	38	35.2
Peppers, bell	124	110	118	115	120	117.4
Persian melons	110	110	92	90	105	101.8
Potatoes	225	245	252	242	272	247.7
Spinach	112	120	125	125	125	121.1

\* Fresh and processed.



Part 1. California Leads Nation in Vegetable Production

Crops Harvested, Yields, and Production, 1953-1957, (2, 4).

Crop	1953	1954	1955	1956	1957	Five-year averages
	1	2	3	4	5	6
	(hundredweight)					
Yields— <i>Continued</i>						
Strawberries.....	163	146	119	128	112	130.9
Sweet potatoes.....	71	71	71	80	75	73.6
Tomatoes.....	177	172	151	150	152	159.9
Watermelons.....	131	134	148	135	148	139.4
	.....	.....	.....	.....	.....	.....
	(hundredweight)					
Production						
Artichokes.....	344	360	356	320	329	342
Asparagus.....	605	485	428	617	763	580
Beans, snap.....	581	661	600	513	635	600
Brussels sprouts.....	634	583	416	594	530	551
Broccoli.....	1,272	1,039	1,408	1,483	1,172	1,275
Cabbage.....	2,045	1,944	1,857	1,845	2,302	1,999
Cantaloups.....	5,288	5,589	5,468	4,726	5,707	5,356
Carrots.....	6,417	6,477	6,129	6,254	5,829	6,221
Cauliflower.....	1,880	1,719	2,081	1,983	1,752	1,883
Celery.....	7,474	8,043	8,349	9,451	8,920	8,447
Corn, sweet.....	1,487	1,637	1,548	1,207	1,358	1,447
Cucumbers.....	587	614	556	518	590	573
Garlic.....	109	146	212	204	196	173
Honeydew.....	1,210	1,332	1,206	1,128	932	1,167
Lettuce.....	20,022	19,888	20,650	20,757	20,523	20,368
Onions.....	4,011	3,118	2,964	3,492	3,979	3,513
Peas, green.....	220	266	263	187	214	230
Peppers, bell.....	397	429	425	437	492	436
Persian melons.....	220	209	212	180	200	204
Potatoes.....	29,280	23,324	29,189	25,872	30,918	27,717
Spinach.....	280	240	238	238	238	247
Strawberries.....	717	716	644	885	1,258	844
Sweet potatoes.....	781	852	923	960	975	898
Tomatoes.....	4,893	5,374	5,320	5,647	5,717	5,390
Watermelons.....	2,465	2,687	2,688	2,785	2,841	2,693
Total fresh.....	93,219	87,732	94,130	92,283	98,370	93,154

Tomatoes dominate both acreage and production among the processed crops (table 4). Spinach, asparagus, strawberries, and green lima beans follow in that order according to volume of production; green lima beans, green peas, spinach, and chili peppers according to acres (separate acreages are not available for processed asparagus).

TABLE 4  
California Principal Vegetable Crops, Processed; Acreages, Yields, and Production,  
1953-1957, (2).

Crop	1953	1954	1955	1956	1957	1953-57 average
	1	2	3	4	5	6
(thousand acres)						
Acreages						
Beans, snap.....	2.5	3.8	3.5	3.0	3.0	3.2
Beans, green lima.....	27.6	27.4	23.5	28.1	29.9	27.3
Cucumbers.....	4.0	3.1	3.1	3.6	3.3	3.4
Peas, green.....	10.0	7.3	9.8	13.2	8.8	9.8
Peppers, chili.....	3.6	3.0	2.8	3.6	4.2	3.6
Spinach.....	8.2	7.4	9.3	9.6	10.2	8.9
Tomatoes.....	83.0	79.5	116.3	151.5	123.0	110.7
(tons)						
Yields						
Asparagus.....	1.10	1.05	1.25	1.20	1.25	1.18
Beans, snap.....	6.40	7.50	7.00	8.30	8.00	7.52
Beans, green lima.....	1.46	1.41	1.47	1.58	1.53	1.49
Cucumbers.....	8.64	9.50	8.18	9.74	10.08	9.27
Peas, green.....	1.27	1.28	1.44	1.54	1.54	1.45
Peppers, chili.....	1.38	1.64	1.35	1.63	1.62	1.55
Spinach.....	6.69	7.61	7.03	7.01	7.29	6.98
Strawberries.....	8.14	7.32	5.96	6.40	5.60	6.57
Tomatoes.....	17.00	16.90	17.10	18.30	16.30	17.23
(thousand tons)						
Production						
Asparagus.....	45.9	51.8	74.5	60.6	56.6	58.0
Beans, snap.....	16.0	28.5	24.5	24.9	24.0	24.0
Beans, green lima.....	40.3	38.6	34.7	44.3	45.6	41.0
Cucumbers.....	34.6	29.5	25.4	35.1	33.3	37.0
Peas, green.....	12.7	9.4	14.1	20.3	13.6	14.0
Peppers, chili.....	4.9	6.4	3.8	5.9	6.8	6.0
Spinach.....	54.3	49.4	65.3	66.9	74.3	62.0
Strawberries.....	40.6	43.9	51.2	77.4	53.0	53.0
Tomatoes.....	1,411.0	1,343.0	1,989.0	2,772.0	2,005.0	1,904.0

Vegetables vary widely in importance in different areas of California. The following indicates a ranking by vegetable acres according to corresponding geographic subareas, Federal-State Crop and Livestock Reporting Service Districts, and United States Census economic subregions:

Sub-area	Geographic location	Crop and Livestock Reporting Service Districts	Census economic subregions	Production ranking
A	North Coast & Mountain	1, 2, 3, & 6	113, 118 (portions)	5
B	Sacramento Valley	5	116	4
C	San Joaquin Valley	5A		1
D	Central Coast	4	117	3
E	Southern California	8	115	2

(See figure 2 for location of subareas)

Each California subarea, except subarea A, is an important producer of several vegetable crops. Various of these crops are important in different marketing seasons in these four remaining subareas. Tomatoes, however, tend to dominate the total vegetable production in subarea B, while winter and spring crops are relatively most important in subarea E. The widest seasonal marketing distribution, therefore, occurs in subareas C and D (table 7).

Marketings for various California vegetable crops vary widely. The April-June season is the most important with 51-75 per cent of the marketings; asparagus, cucumbers, peas, potatoes, and strawberries are in this group.

Data available do not show clear evidence of shifts among the several California subareas in their relative importance as vegetable producers. Combined fresh rail and boat shipments by subareas declined between 1953 and 1957; outbound truck shipments increased sharply, however, and apparently account for most of these declines.

*Part 2.*  
*Production*  
*Volume and*  
*Seasonal*  
*Timing Vary*  
*in California*  
*Subareas*

FIGURE 2. California Vegetable Crop Acres: Fresh Shipped, Processed and Total by Subareas, 1953-1957, (5).

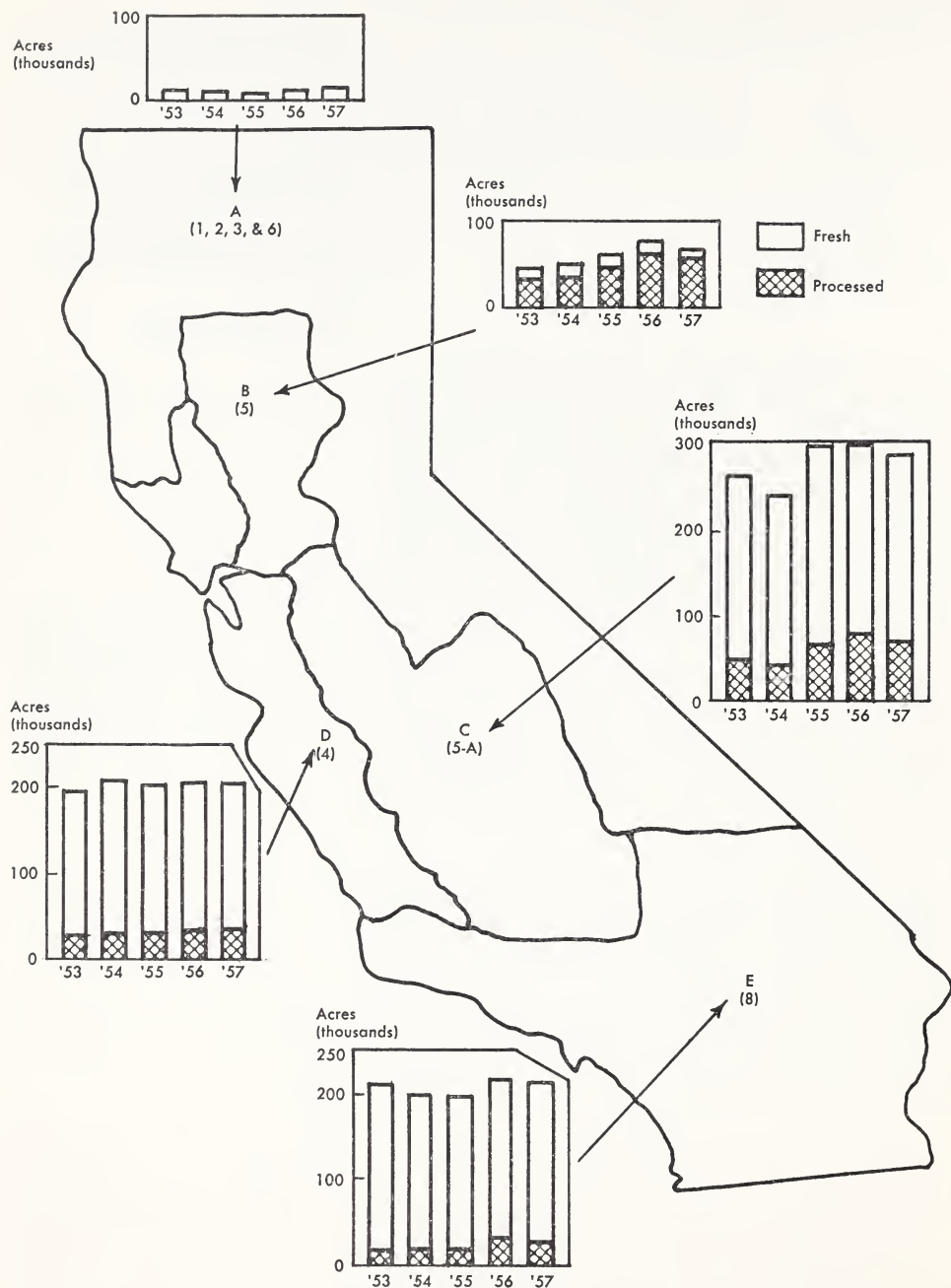




TABLE 5  
California Vegetable Crop Acres; Fresh Shipped, Processed, and Total by Subareas,  
1953-1957, (5).

Area and form	1953	1954	1955	1956	1957
	1	2	3	4	5
	(acres)				
Subarea A (1, 2, 3, & 6)					
Fresh.....	16,694	13,571	11,407	12,715	13,916
Processed.....	.....	10	.....	.....	.....
Total.....	16,694	13,581	11,407	12,715	13,916
Subarea B (5)					
Fresh.....	13,990	13,713	15,163	15,650	12,629
Processed.....	34,885	34,695	46,760	59,030	54,025
Total.....	48,875	48,408	61,923	74,680	74,680
Subarea C (5-A)					
Fresh.....	217,251	196,260	236,722	220,273	218,363
Processed.....	49,005	42,780	63,170	80,510	73,257
Total.....	266,256	239,040	299,892	300,783	291,620
Subarea D (4)					
Fresh.....	167,157	182,370	176,800	180,393	178,968
Processed.....	30,565	30,760	32,860	33,950	34,638
Total.....	197,722	213,130	209,660	214,343	213,606
Subarea E (8)					
Fresh.....	189,173	180,591	177,178	187,079	190,951
Processed.....	24,105	23,555	22,440	34,960	29,841
Total.....	213,278	204,146	199,618	222,039	220,792

TABLE 6

California's Principal Vegetable Crop Fresh Shipments; Percentage Distribution by Seasons, Five-Year Averages, 1953-1957, (6).

Crop	January-March	April-June	July-September	October-December
	(percentages)			
Asparagus.....	37.4	62.5	0.0	0.1
Beans, snap and lima.....	7.6	80.3	11.2	0.9
Broccoli.....	43.1	21.5	6.9	28.5
Cabbage.....	42.5	43.4	5.0	9.1
Cantaloups.....	0.1	20.4	78.8	0.7
Carrots.....	16.6	34.3	25.7	23.4
Cauliflower.....	49.3	29.5	5.4	15.9
Celery.....	19.8	23.6	19.3	37.3
Corn, green.....	0.3	34.5	39.2	26.0
Cucumbers.....	0.0	69.8	25.6	4.6
Greens (except spinach).....	31.0	0.3	12.1	56.6
Honeydews.....	0.0	9.4	79.6	11.0
Lettuce and romaine.....	24.1	27.6	30.4	17.9
Mixed and miscellaneous melons.....	0.0	7.5	65.9	26.6
Mixed vegetables.....	15.4	20.7	28.9	35.0
Onions.....	2.9	42.6	30.2	24.3
Peas, green.....	5.0	61.2	11.1	22.7
Peppers.....	0.0	0.2	21.7	78.1
Persian melons.....	0.0	1.5	78.9	19.6
Potatoes.....	5.5	61.4	27.1	6.0
Spinach.....	62.2	16.3	8.2	13.3
Strawberries.....	0.0	65.1	31.4	3.5
Tomatoes.....	1.5	9.3	47.6	41.6
Watermelons.....	0.0	34.0	65.3	0.7

TABLE 7

California Principal Vegetable Crop Fresh Shipments; Value of Production and Seasonal Distribution by Subareas, Five-Year Averages, 1953-1957, (2, 6).

Crop	January-March	April-June	July-September	October-December	Value of production
	(percentages)				(1,000 dollars)
Subarea A (1, 2, 3, and 6)*					
Potatoes.....	42.1	16.9	2.6	38.4	7,230
Subarea B (5)					
Asparagus.....	22.9	77.1	0.0	0.0	1,388
Beans, snap and lima.....	0.0	0.0	0.0	100.0	111
Carrots.....	9.9	0.0	0.0	90.1	150
Celery†.....	.....	.....	.....	.....	34
Crucifers†.....	.....	.....	.....	.....	82
Lettuce†.....	.....	.....	.....	.....	129
Melons.....	0.0	0.0	87.4	12.6	1,800
Potatoes†.....	.....	.....	.....	.....	173
Strawberries.....	0.0	93.5	3.2	3.3	651
Tomatoes.....	0.0	0.0	36.7	63.3	25,130
Subarea C (5-A)					
Asparagus.....	38.9	61.1	0.0	0.0	15,543
Beans, snap and lima.....	0.0	100.0	0.0	0.0	3,125
Carrots.....	20.2	30.5	23.8	25.5	1,546
Celery.....	9.6	0.5	0.3	89.6	3,807
Crucifers.....	41.2	11.8	0.0	47.0	513
Lettuce.....	2.6	24.5	0.0	72.9	1,324
Melons.....	0.0	0.1	97.3	2.6	19,431
Potatoes.....	0.8	79.7	17.8	1.7	39,974
Strawberries.....	0.0	100.0	0.0	0.0	5,777
Tomatoes.....	0.0	6.1	47.7	46.2	36,686
Subarea D (4)					
Asparagus.....	67.5	32.5	0.0	0.0	2,793
Beans, snap and lima.....	0.0	83.3	16.7	0.0	5,219
Carrots.....	2.0	15.4	45.2	37.4	11,981
Celery.....	1.5	8.0	40.3	50.2	11,601
Crucifers.....	44.2	26.6	9.4	19.8	13,465
Lettuce.....	0.0	36.3	50.1	13.6	48,119
Melons.....	0.0	0.4	99.6	0.0	208
Potatoes.....	26.1	5.9	36.0	32.0	2,637
Strawberries.....	0.0	54.7	40.5	4.8	21,385
Tomatoes.....	0.0	0.0	49.9	50.1	8,736
Subarea E (8)					
Asparagus.....	93.8	6.2	0.0	0.0	386
Beans, snap and lima.....	36.7	38.8	24.5	0.0	7,420
Carrots.....	25.1	48.6	12.4	13.9	14,586
Celery.....	34.1	42.9	5.8	17.2	15,560
Crucifers.....	48.7	31.3	3.5	16.5	9,365
Lettuce.....	74.8	5.4	2.5	17.3	31,151
Melons.....	0.0	81.6	18.3	0.1	13,816
Potatoes.....	0.9	2.2	95.0	1.9	11,732
Strawberries.....	0.0	69.3	26.6	4.1	6,635
Tomatoes.....	0.0	20.9	33.8	45.3	13,130

\* No railroad carlot shipments of vegetables, other than potatoes, were made from this subarea.

† No railroad carlot shipments from this subarea.

*Part 3.*  
*California's*  
*Vegetable*  
*Production*  
*Involves*  
*Valuable*  
*Resources and*  
*Heavy Annual*  
*Outlays*

California's vegetable industry uses an important fraction of the state's total agricultural resources, in terms of both physical goods and dollar values. Vegetable production tends to concentrate on relatively high-quality land.

Wide variation in climate characteristics occur among important producing regions, and long growing seasons and irrigated production characterize all vegetable areas in California. Subareas B and C produce largely summer crops that thrive under relatively high temperatures but these subareas also are important in asparagus and potatoes, both spring crops. Subarea E dominates the winter salad crop production, while cool summers enable growers in subarea D to continue such production during the summer months.

Subareas B and C include almost twice as many harvested acres as the other two for which census data are available combined, and also show highest percentage of harvested land irrigated—94 per cent. Subareas D and E, on the other hand, have higher percentages of harvested and irrigated land in vegetables and higher land values than the first two subareas (table 8). This relationship is further indicated by the fact that 40 per cent of all California vegetable farms in United States Census economic classes I and II are in subarea D, with another 35 per cent in subarea E, leaving only 25 per cent in subareas B and C combined.

Vegetable farms use relatively elaborate irrigation facilities. Thus, reports from a grower sample indicate eight wells, 5,300 feet of portable pipe, and 41,000 feet of permanent underground pipe per 1,000 harvested acres. These same ratios applied to the 1953–1957 estimated average of 790,000 acres in vegetables would indicate over 6,000 wells and 32,000,000 linear feet of permanent pipe on California vegetable farms (table 10).

These same grower reports, plus census data, indicate a range of power units on vegetable farms from 6 tracklayer tractors to 14 trucks per 1,000 harvested acres. Estimated totals range from 5,000 tracklayers to 11,000 trucks for the entire vegetable crop acre-

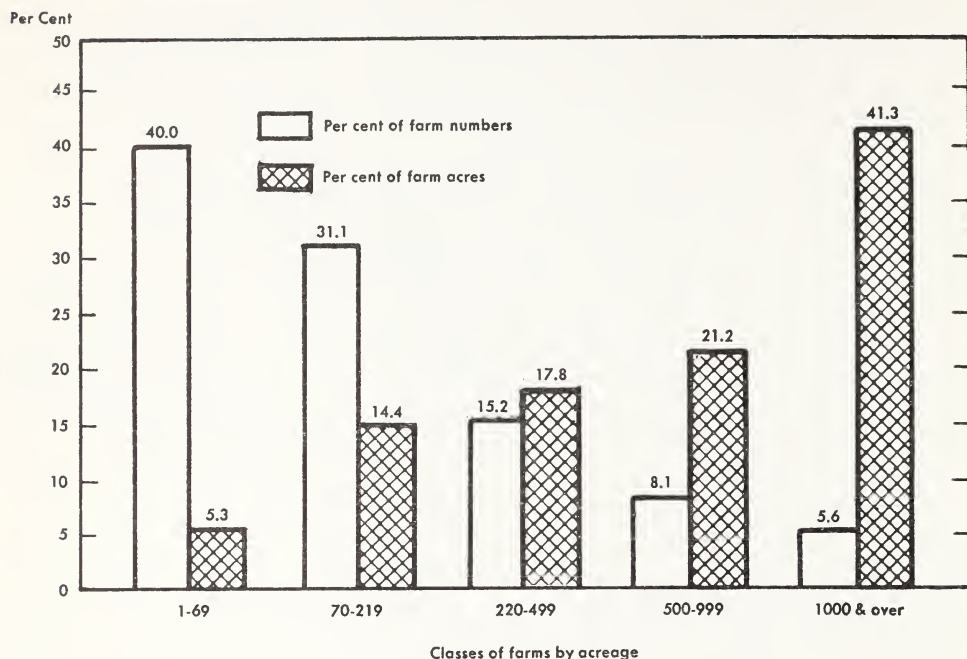


age (fig. 3). Similar estimates for specified major equipment items show ranges from 1.4 land planes to 11 planters per 1,000 acres, and from 1,000 land planes to 8,300 planters for all vegetable crop acres (table 11). Special equipment such as field loaders and packing equipment averaged 7 or 8 units per 10,000 acres and from 550–630 in totals (table 12).

Vegetable production requires large numbers of workers, in spite of mechanization. The averages per 100 acres, based on grower reports and census data, were 9 for production workers and 18 for harvest pack workers. Estimated payments to production workers per one hundred harvested acres during the season were \$12,400. Industry total figures amounted to 68,000 hired production workers, 142,000 harvest-pack workers, and \$98 million payments (table 13).

Growers also have heavy cash outlays for other major expense items. Thus, average expenses per one hundred harvested acres ranged from \$700 for machine hire to \$4,100 for fertilizer. Estimated totals for the industry ranged from \$5 millions for machine hire to \$32 millions for fertilizer (table 14).

FIGURE-TABLE 2. Commercial Vegetable Farm Size and Total Acreage, Census Economic Classes I & II; Percentage Distribution 1954 Census, (8).



Subarea	Subregion	Farms		Land	
		Number	Per cent of total	Acres	Per cent of total
	1	2	3	4	5
B, C.....	116	644	29.6	208,798	33.6
D.....	117	730	33.6	218,921	35.3
E.....	115	800	36.8	192,823	31.1
Total.....		2,174	100.0	620,542	100.0

TABLE 8  
Total Harvested, Irrigated, and Vegetable (including potato) Acres, on All Census Commercial Farms; and Average Value Land and Buildings Per Acre, for Vegetable Farms in Census Economic Classes I & II, 1954, (8).

Land	Unit	Subareas			Total
		B & C(116)	D(117)	E(115)	
		1	2	3	
Harvested land.....	acres	5,028,100	1,201,211	1,452,949	7,682,260
Irrigated land.....	acres	4,730,458	536,142	1,177,234	6,443,834
Per cent harvested land irrigated....	per cent	94	45	81	84
Land in vegetables.....	acres	179,951	138,858	135,335	454,144
Value land and buildings per acre..	dollars	468	899	890	

TABLE 9  
California Vegetable Crop Production; Soils in Selected Localities by Subareas and Class, (9, 10).

Grades	C (5A)		D		E	
	Acres	Per cent	Acres	Per cent	Acres	Per cent
	1	2	3	4	5	6
I.....	407,576	24.9	110,080	16.2	120,640	16.9
II.....	372,339	22.8	110,528	16.3	135,040	18.9
III.....	311,680	19.0	180,288	26.6	368,832	51.7
Other.....	544,245	33.3	277,504	40.9	89,088	12.5
Total.....	1,635,840	100.0	678,400	100.0	713,600	100.0

C (5A)—Wasco, Bakersfield, and Mendota  
D —Salinas, Santa Maria, and Ventura  
E —El Centro, and Brawley  
Mendota *Grade I*, some grade 2 included, alkaline  
*Grade II*, some grade 3 included, alkaline  
*Grade III*, some grade 2 included, alkaline

TABLE 10  
Estimated California Wells Per 1,000 Acres Harvested and Totals; Averages, 1953-1957, (7, 11).

Item	Per 1,000 acres	Total harvested acreage	
	Grower reports	Grower reports	Estimated 1953-1957*
	1	2	3
Acres.....	343,682.0	343,682	786,972
Wells (number).....	7.7	2,630	6,060
Portable pipe (ft.).....	5,300.0	1,821,520	4,170,952
Permanent pipe (ft.).....	41,000.0	14,090,980	32,265,852

\* Totals for irrigation facilities estimated by the author.

TABLE 11

Estimated Numbers for Specified Equipment Items Per 1,000 Acres Harvested, and Totals; Averages 1953–1957, (7, 11).

Item	Per 1,000 acres	Total harvested acreage	
	Grower reports	Grower reports	Estimated 1953–1957*
	1	2	3
Acres.....	343,682.0	343,682	786,972
Land planes.....	1.4	500	1,101
Plows, chisels.....	5.3	1,820	4,171
Disc harrows.....	6.5	2,240	5,115
Listers, shapers.....	4.1	1,470	3,384
Planters.....	10.6	3,640	8,342
Cultivators.....	5.9	2,030	4,643

\* Totals for equipment numbers estimated by the author.

FIGURE 3. Estimated Transport and Field Power Units Per 1,000 Acres Harvested and Totals; Averages 1953–1957, (7,8,11).

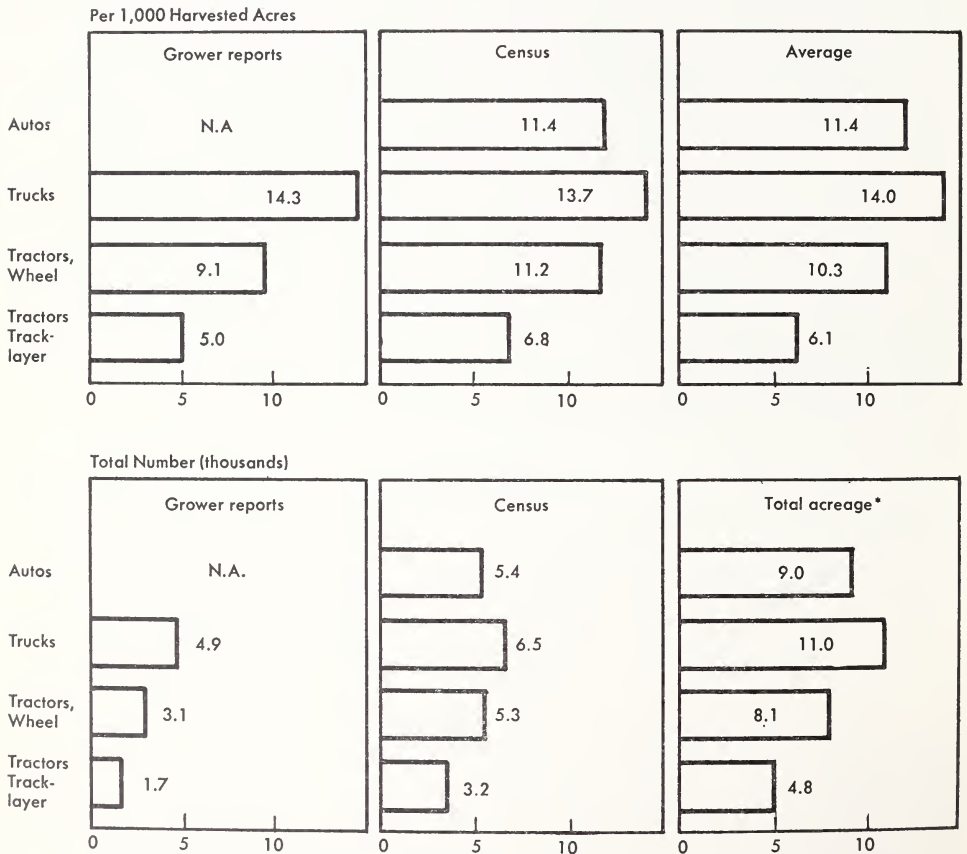




TABLE 12

Estimated Numbers for Specified Harvesting and Shipping Equipment Items  
Per 10,000 Acres Harvested and Totals; Averages, 1953-1957, (7, 11).

Item	Per 10,000 acres	Total harvested acreage	
	Grower reports	Grower reports	Estimated 1953-1957*
	1	2	3
Acres.....	343,682	343,682	786,972
Field loaders.....	7	240	551
Graders.....	8	280	630
Conveyors.....	7	240	551
Staplers, stitchers, etc.....	7	240	551

\* Totals for equipment items estimated by author.

TABLE 13

Estimated Production and Harvest-Pack Workers, Payments to Production Workers  
Per 100 Acres Harvested and Totals; Averages 1953-1957, (7, 8, 11).

Item	Per 100 acres			Total harvested acres		
	Grower reports	Census I & II, 115-117	Average	Grower reports	Census I & II, 115-117	Estimated 1953-1957*
	1	2	3	4	5	6
Acres.....	343,682.0	472,321.0	408,002.0	343,682.0	472,321.0	786,972.0
Production workers.....	8.8	8.6	8.7	30,240.0	40,774.0	68,466.0
Harvest-pack workers.....	18.0	.....	18.0	61,767.0	.....	141,655.0
Payments to production workers (dollars).....	.....	12,398.0	12,398.0	.....	58,556,640.0	97,569,112.0

\* Totals for workers and payments estimated by author.

TABLE 14

Estimated Outlays for Major Variable Expense Items Per 100 Acres Harvested and  
Totals; Averages, 1953-1957, (7, 8, 11).

Item	Per 100 acres			Total harvested acres		
	Grower reports	Census I & II, 115-117	Average	Grower reports	Census I & II, 115-117	Estimated 1953-1957*
	1	2	3	4	5	6
Acres.....	343,682	472,231	408,002	343,682	472,231	786,972
Fertilizer.....	4,459	3,750	4,133	15,324,800	11,015,025	32,524,683
Pest control.....	1,983	.....	1,983	6,815,220	.....	15,605,655
Electric power.....	1,721	.....	1,721	5,914,770	.....	13,543,754
Seeds and plants.....	1,147	.....	1,147	3,942,040	.....	9,026,569
Fuel and lubricants.....	1,118	1,176	1,151	3,842,370	5,552,428	9,060,731
Machine hire.....	.....	667	667	.....	3,151,793	5,251,464

\* Totals for outlay items estimated by author.

## *Part 4.*

# *Vegetables are Big Business on Both Specialized and General Farms*

Vegetable crop producers range from highly specialized units to general crop farms with limited acres in vegetables. Operators on the more specialized farms often double-crop, thus harvesting more acres per season than there are tillable acres on the farm.

Data representing a specialized farm model with 500 acres in vegetables show current average investments amounting to \$1 thousand, and original costs equaling \$1,320 per actual farm acre (table 15). These valuations are consistent with 1954 census reports. Land and leveling accounted for 54 per cent, irrigation 15 per cent, structures 14 per cent, and power and machinery items 17 per cent of the original investment value. The aggregate farm investments totaled \$400 thousands in original costs and represent \$330 thousands under current depreciated conditions. Gross receipts on such a farm, based on average yields, and prices for the several crops, range from \$260 per acre for sugar beets (a general field crop) and \$400 for spring lettuce to \$1 thousand per acre for carrots; they averaged \$500 per acre.

Similar data for a 300-acre general crop farm with 60 acres in potatoes indicate total per acre investments of \$645 at current values and \$800 per acre original cost (table 16). Land and leveling costs represent 64 per cent, irrigation 16 per cent, structures 3 per cent, and equipment 17 per cent, according to original costs. Aggregate investments were \$247 thousands originally and \$206 thousands under current depreciated conditions. Gross receipts on the 300-acre farm range from \$60 for barley to \$540 per acre for potatoes. The average for all crops grown was \$267 per acre.

Sometimes large farms with limited supplies of high cost irrigation water will produce melons or some other vegetable crop along with a general field crop such as cotton. Data for a 2,800-acre farm with 750 acres in melons show original investments of \$448 and current values of \$375 per acre (table 17). Land and leveling accounted for 66 per cent, irrigation 16 per cent, structures 4 per cent, and power and machinery 14 per cent of these original investments. The totals amounted to \$1.25 millions for original costs and over \$1.0 million at current levels. Gross receipts

*Part 4. Vegetables are Big Business on Specialized, General Farms*

for this 2,800-acre farm ranged from \$39 per acre for barley to \$525 per acre for melons, and averaged \$308 per acre.

The above data do not measure profits from vegetable farming; they do indicate something of the size of three differing types of vegetable organizations in terms of dollars involved. In order to estimate profits it would be necessary to consider depreciation and other overhead costs, and to include various miscellaneous items.

TABLE 15

Typical Vegetable Farm with 500 Acres in Crops; Investments, Gross Receipts, and Variable Expenses, 1955–1957 Prices, (12).

Item	Investments						
	Average investments		Original cost	Per cent			
	Per acre	Total					
	1	2	3	4			
	dollars						
Land.....	600.00	194,400.00	194,400.00	46			
Leveling.....	110.00	35,640.00	35,640.00	8			
Irrigation.....	100.00	32,400.00	64,800.00	15			
Buildings.....	90.00	29,160.00	58,320.00	14			
Power and machinery.....	114.00	36,936.00	73,872.00	17			
Total.....	1,014.00	328,536.00	427,032.00	100			
Item	Gross receipts						
	Broccoli	Carrots	Cauli- flower	Spring lettuce	Summer lettuce	Sugar beets	Total farm
	1	2	3	4	5	6	7
Acres.....	64	40	127	57	116	100	504
Yield (crates).....	156	278	433	168	214	20T	.....
Price (dollars).....	3.08	3.49	1.11	2.35	2.95	13.00	.....
Value (dollars).....	480.48	970.22	480.63	394.80	631.30	260.00	500.66
Total.....	30,750.72	38,808.80	61,040.01	22,503.60	73,230.80	26,000.00	252,333.93
Item	Cash variable expenses (dollars)						
	1	2	3	4	5	6	7
Contracts per acre.....	189.04	362.09	174.10	123.22	147.79	83.56	161.14
Total.....	12,098.56	14,483.60	22,110.70	7,023.54	7,143.64	8,356.00	81,216.04
Equipment per acre.....	2.96	6.69	6.29	3.31	3.31	4.41	4.50
Total.....	189.44	267.60	798.83	188.67	383.96	441.00	2,269.50
Labor per acre.....	49.25	49.03	61.53	44.35	44.35	40.17	48.84
Total.....	3,152.00	1,961.20	7,814.31	2,527.95	5,144.60	4,017.00	24,617.06
Materials per acre.....	185.35	328.97	268.26	152.01	182.99	45.03	185.49
Total.....	11,862.40	13,158.80	34,069.02	8,664.57	21,226.84	4,503.00	93,484.63
Power per acre.....	15.21	21.46	24.18	14.92	14.92	16.61	18.15
Total.....	973.44	858.40	3,070.86	850.44	1,730.72	1,661.00	9,144.86
Total per acre.....	441.81	768.24	534.36	337.81	393.36	189.78	418.12
Grand total.....	28,275.84	30,729.60	67,863.72	19,255.17	45,629.76	18,978.00	210,732.09



TABLE 16  
Typical General Farm with 60 Acres of Vegetables (300 Acres in Crops) ;  
Investments, Gross Receipts, and Variable Expenses,  
1955-1957 Prices, (12) .

Item		Investments			
		Average investments		Original cost	Per cent
		1	2	3	4
		dollars			
Land.....		400.00	128,000.00	128,000.00	52
Leveling.....		95.00	30,400.00	30,400.00	12
Irrigation.....		62.00	19,705.00	39,410.00	16
Buildings.....		11.43	3,658.00	7,316.00	03
Power and machinery.....		76.22	24,393.00	41,673.00	17
Total.....		644.65	206,156.00	246,799.00	100

Item	Gross receipts						
	Potatoes	Alfalfa	Barley	Cotton lint	Cotton seed	Milo	Total farm
	1	2	3	4	5	6	7
Acres.....	62	21	90	119	....	55	347
Yield.....	290 cwt.	7.0 ton	25 cwt.	2.1 bale	0.892 ton	30 cwt.	
Price (dollars).....	1.85/cwt.	26.00/ton	2.30/cwt.	167.30/bale	46.00/ton	2.15/cwt.	
Value (dollars) ....	536.50	182.00	57.50	351.33	41.05	64.50	267.57
Total.....	33,263.00	3,822.00	5,175.00	41,808.27	4,885.20	3,547.50	92,500.97

Item	Cash variable expenses (dollars)						
	1	2	3	4	5	6	7
Contracts per acre.	267.42	36.75	12.62	66.73		15.33	78.59
Total.....	16,579.87	771.75	1,135.08	7,940.90		843.60	27,271.20
Equipment per acre	3.96	4.15	.62	15.94		1.76	6.87
Total.....	245.71	87.15	55.89	1,897.22		96.80	2,382.68
Labor per acre.....	12.39	12.48	4.27	17.25		7.44	11.17
Total.....	768.13	262.17	384.69	2,052.20		409.08	3,876.27
Materials per acre..	150.31	31.22	11.00	33.63		15.43	45.58
Total.....	9,319.22	655.62	990.00	4,001.97		848.65	15,815.46
Power per acre.....	6.49	4.33	2.85	9.90		4.07	6.20
Total.....	402.38	90.93	256.50	1,178.10		223.85	2,151.76
Total per acre.....	440.57	88.93	31.36	143.45		44.03	148.41
Grand total.....	27,315.31	1,867.62	2,822.07	17,070.39		2,421.98	51,497.37

TABLE 17

Typical General Farm with 750 Acres in Vegetables (2,700 Acres in Crops) ;  
Investments, Gross Receipts, and Variable Expenses, 1955–1957 Prices, (12).

Item	Investments			
	Average investments		Original cost	Per cent
	Per acre	Total		
	1	2	3	4
	<i>dollars</i>			
Land.....	200.00	560,000.00	560,000.00	45
Leveling.....	95.00	266,000.00	266,000.00	21
Irrigation.....	37.41	104,754.00	206,820.00	16
Buildings.....	8.95	25,065.00	50,130.00	04
Power and machinery.....	33.53	93,883.00	172,580.00	14
Total.....	374.89	1,049,702.60	1,255,530.00	100

Item	Gross receipts					
	Melons	Barley	Cotton lint	Cotton seed	Fallow	Total farm
	1	2	3	4	5	6
Acres.....	750.00	810.00	440.00	.....	700.00	2,700.00
Yield.....	175 crates	33 cwt.	2.00 bales	.850 ton	.....	.....
Price (dollars).....	3.00/crate	2.15/cwt.	167.30/bale	46.00/ton	.....	.....
Value (dollars).....	525.00	70.95	334.60	39.10	.....	307.82
Total.....	393,750.00	57,469.50	147,224.00	17,204.00	.....	\$615,647.50

Item	Cash variable expenses (dollars)					
	1	2	3	4	5	6
Contracts per acre..	377.76	1.93	75.16		.08	159.00
Total.....	283,317.76	1,567.87	33,070.16		52.82	318,008.61
Equipment per acre	1.11	3.24	12.44		1.69	5.06
Total.....	832.50	2,624.40	5,473.60		1,183.00	10,113.50
Labor per acre.....	12.16	6.83	26.20		.98	13.43
Total.....	9,117.32	5,536.09	11,526.28		688.76	26,868.45
Materials per acre..	38.67	25.11	49.53		.....	35.57
Total.....	29,002.50	20,339.10	21,793.20		.....	71,134.80
Power per acre.....	4.12	2.48	9.20		.68	4.81
Total.....	3,090.00	2,008.80	4,048.00		476.00	9,622.80
Total per acre.....	433.82	39.59	172.53		3.43	217.87
Grand total.....	325,360.08	32,076.26	75,911.24		2,400.58	435,748.16

California vegetables accounted for 20 to 25 per cent of United States vegetable production during 1951–1955; the total included fresh production, in which California averaged about 20 per cent of the United States total, and processed vegetables, in which California's share of the United States total varied from about 24 to 35 per cent (table 18).

California dominates United States production in certain crops. It is responsible for 45 to 60 per cent of the United States production in the seven most important vegetable crops, and about 30 per cent of the green lima beans (table 19). California's percentage of the processed vegetables tends to run higher than for all vegetables, for items on which data are available.

United States vegetable consumption per capita grew from the early 1900's through World War II, but has remained about steady since 1945 (table 20). Fats, sugar, and meat and eggs all increased sharply during these latter years. As a result, they range from 114 to 125 per cent of their 1940–1944 averages. In contrast, the per capita consumption of potatoes dropped 26 per cent, cereals 17 per cent, and dry beans, peas, and nuts 12 per cent, after World War II. Gains in processed vegetable use have offset declines in fresh vegetable consumption per capita in recent years (table 21 and fig. 4). Canned vegetable use has increased 26 per cent since World War II but the big gain has been in other vegetables (largely frozen), which are 218 per cent above the 1940–1944 level. The population of both the United States and California has increased importantly since 1900 and is continuing to increase (fig.-table 3). All estimates indicate that sharp increases are in prospect by 1975. Depending upon the rate of such gains, actual population in that year may vary from 23 to 26 millions in California and from 216 to 243 millions in the United States as a whole (fig.-table 3). Such increases in mouths to feed must lead to increased consumption, or higher prices, or both, for all products in which declines in use per capita do not offset the gains in numbers.

*Part 5.*  
*Prospects are*  
*for Larger*  
*Future Markets,*  
*Particularly in*  
*Processed*  
*Vegetables*

**TABLE 18**  
Fresh, Processed, and Total California and United States Production Principal Commercial Vegetable Crops, 1951–1955, (13).

Area and form	1951	1952	1953	1954	1955
	Tons (thousands)				
California					
Processed.....	2,440	2,035	1,668	1,593	2,285
Fresh.....	3,837	4,155	4,584	4,320	4,580
Total.....	6,277	6,190	6,252	5,913	6,865
United States					
Processed.....	7,287	6,758	6,688	6,015	6,269
Fresh.....	20,037	20,965	22,901	22,219	22,786
Total.....	27,324	27,723	29,589	28,234	29,055

**TABLE 19**  
Fresh, Processed, and Total California and United States Production Specified Vegetable Crops; Five-Year Average, 1951–1955, (13).

Area and form	1*	2*	3*	4*	5*	6*	7*	8*
	Tons (thousands)							
California								
Processed.....	55	36	1754	†	†	†	†	†
Fresh.....	25	0	243	181	342	314	370	867
Total.....	80	36	1997	181	342	314	370	867
United States								
Processed.....	106	96	3390	*	*	*	*	*
Fresh.....	54	23	956	347	757	694	728	1392
Total.....	160	119	4346	347	757	694	728	1392
California per cent of U. S.								
Fresh.....	46.3	0	25.4	52.1	45.2	45.2	50.8	62.3
Processed.....	51.9	37.5	51.7	.....	.....	.....	.....	.....
Total.....	50.0	30.3	46.0	52.1	45.2	45.2	50.8	62.3

\*1. Asparagus  
2. Beans, green limas  
3. Tomatoes  
4. Broccoli, Brussel Sprouts, Cauliflower  
† Processed included with fresh, if any.

5. Carrots  
6. Cantaloups, Honeydews  
7. Celery  
8. Lettuce

TABLE 20  
United States Per Capita Consumption Index, for Selected Foods;  
(1940–1944 = 100 per cent) Five-Year Averages,  
1910–1955 and 1957, (14).

Foods	1910– 1914	1915– 1919	1920– 1924	1925– 1929	1930– 1934	1935– 1939	1940– 1944	1945– 1949	1951– 1955	1957
	1	2	3	4	5	6	7	8	9	10
All food.....	91	90	92	94	92	94	100	104	103	105
Meats.....	97	92	93	91	89	87	100	103	107	114
Eggs.....	94	90	96	102	95	92	100	119	122	114
Dairy.....	85	87	91	95	93	95	100	104	99	99
Fats.....	66	75	72	86	86	98	100	101	119	125
Fruits.....	92	86	93	98	91	103	100	107	104	104
Vegetables.....	74	76	79	82	85	90	100	106	99	100
Potatoes (Irish and Sweet).....	138	131	124	115	108	104	100	88	74	74
Beans, peas, and nuts....	73	78	77	87	85	96	100	95	88	88
Cereal.....	117	111	103	106	102	96	100	97	88	83
Sugar and syrups.....	67	69	83	95	93	98	100	100	117	120

FIGURE 4. U.S. Per Capita Consumption Indexes for Vegetables and Potatoes  
(1940–1944 = 100 per cent), 1910–1955 and 1957, (14).

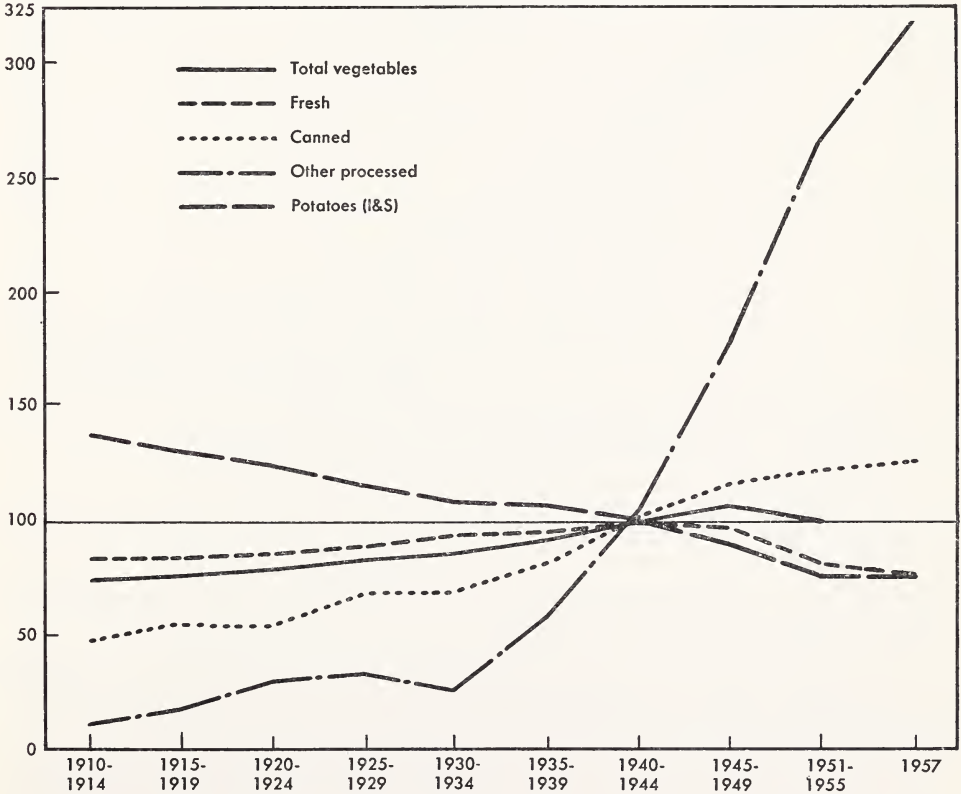
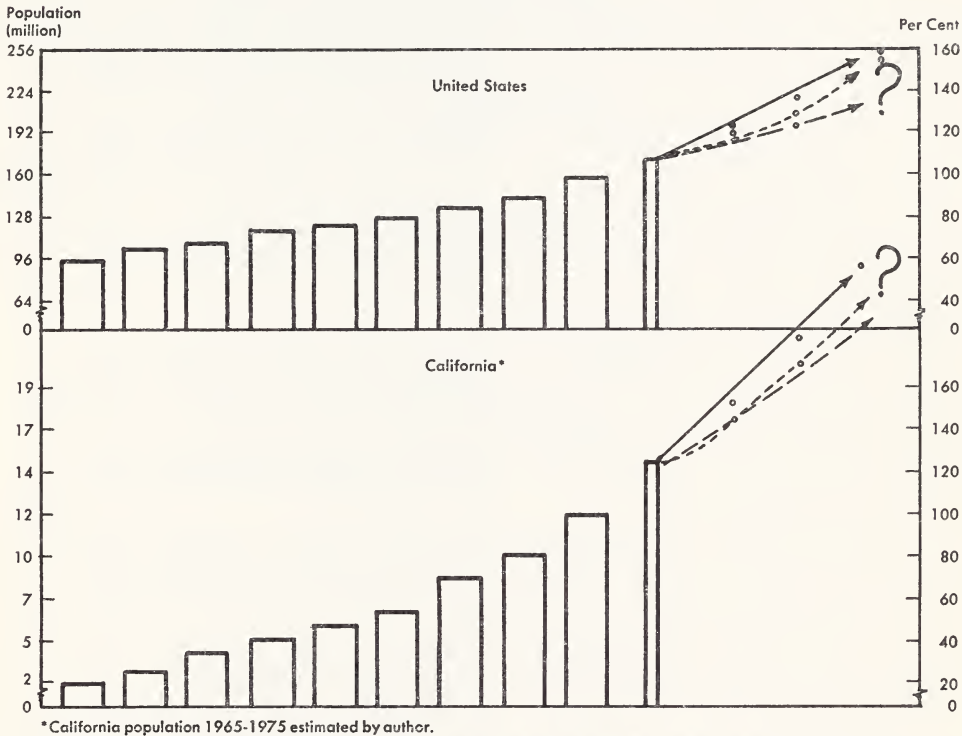




TABLE 21  
United States Per Capita Consumption Indexes for Vegetables and Potatoes;  
(1940–1944 = 100 per cent) Five-Year Averages,  
1910–1955 and 1957, (14).

Vegetables	1910– 1914	1915– 1919	1920– 1924	1925– 1929	1930– 1934	1935– 1939	1940– 1944	1945– 1949	1951– 1955	1957
	1	2	3	4	5	6	7	8	9	10
Vegetables and melons...	67	70	89	96	97	98	100	108	95	108
Tomatoes.....	68	71	81	88	94	97	100	106	94	87
Leafy green and yellow vegetables.....	57	60	75	88	92	95	100	104	87	84
Other vegetables.....	62	66	81	91	94	98	100	108	97	95
Melons.....	97	101	138	134	117	110	100	116	113	106
Total vegetables.....	74	76	79	82	85	90	100	106	99	100
Fresh.....	85	84	87	89	94	94	100	98	80	75
Canned.....	49	56	56	69	69	80	100	115	121	126
Other process.....	11	18	29	32	26	58	100	174	263	318
Potatoes (Irish and Sweet).....	138	131	124	115	108	104	100	88	74	74

FIGURE-TABLE 3. United States and California Population and Index Numbers (1953 = 100 per cent) : Five-Year Averages 1910-1957, and Projections to 1975, (15,16) .



Area	1910-1914	1915-1919	1920-1924	1925-1929	1930-1934	1935-1939	1940-1944	1945-1949	1951-1955	1958		1965	1970	1975
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
United States Population(million)	96	103	110	119	125	129	135	144	160	174	I III IV	(estimates)		
												199	220	243
												194	208	226
California* Population (million)	3	3	4	5	6	7	8	10	12	15	I II III	192	202	216
												18	22	26
												18	21	24
												18	20	23

\* California population 1965-1975 estimated by author.

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### *Key to Abbreviations*

USAMS	:	United States Agricultural Marketing Service.
USDA	:	United States Department of Agriculture.
CCLRS	:	California Crop and Livestock Reporting Service.
UC	:	University of California.
USDC	:	United States Department of Commerce.



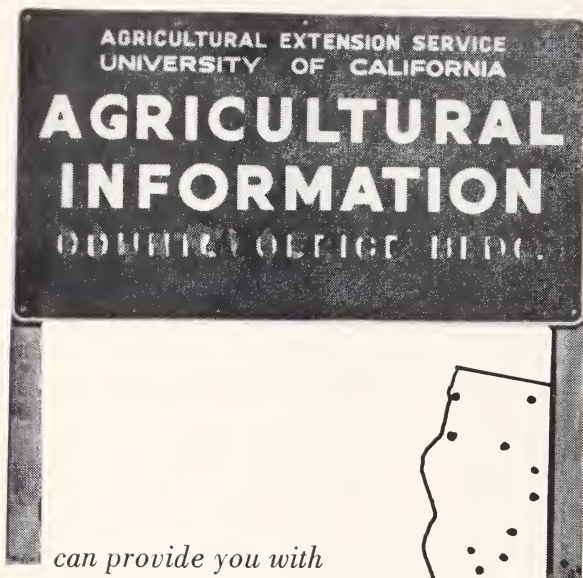
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NOTE: Each source is numbered for keying to descriptive headings of tables.

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